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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,069	01/31/2002	Liqin Dong	CISCP744	2503

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EXAMINER	
NG, CHRISTINE Y	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/066,069	DONG ET AL.	
	Examiner	Art Unit	
	Christine Ng	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-12,15-18,20 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-12,15-18,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claim is objected to because of the following informalities:

In claim 3 line 1, "2" should be changed to --1--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5-12, 16-18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,625,161 to Su et al in view of U.S. Publication No. 2003/0112764 to Gaspard et al in view of U.S. Patent No. 5,903,735 to Kidder et al, and in further view of U.S. Patent No. 6,731,639 to Ors et al.

Referring to claim 1, Su et al disclose in Figure 3 a method for defining hardware routing paths in a network having IP paths to a destination node, the method comprising:

Assigning (step 21) a unique path ID (predetermined common attribute) for each path within a path group (a stream of packets), the path ID for each path comprising an IP address, wherein the path group contains IP paths. The process examines a continuous stream of packets for a predetermined common attribute in the packet header, which could be the IP destination address or the IP source and destination address. Refer to Column 4, lines 13-15 and Column 4, lines 49-59.

Comparing (step 23) all path IDs in each path group. The process groups the continuous stream of packets into one or more traffic aggregates based on the predetermined common attribute. Refer to Column 4, lines 59-67.

Assigning (step 25) a common hardware resource (communication channel or link) to groups having matching path IDs. Refer to Column 5, lines 1-7.

Su et al do not disclose that the path group contains both IP and MPLS paths.

Gaspard et al disclose in Figure 4 a network with links 430, 435, 440, 445 that are classified according to the protocol that they support. The network manager classifies the IP links into links that utilize the IP protocol, the MPLS protocol, or both the IP and MPLS protocol. Links 430 and 440 support MPLS and IP forwarding, links 435 and 445 support just IP forwarding, and some links (not shown) just support just MPLS forwarding. Refer to Sections 0026 and 0044-0045. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the path group contains both IP and MPLS paths. One would be motivated to do so since IP and MPLS are prominent network protocols used to transmit packets from one network device to another. A network that supports both IP and MPLS is more flexible. Refer to Sections 0003 and 0008.

Su et al also do not disclose wherein the path ID assigned for each of said IP paths comprises a unicast IP address.

Kidder et al disclose a RSVP system in which sender and receiver nodes allocate a path for data transmission. A PATH message stores each node/router along the path that includes at least the unicast IP address of the previous hop node. Refer to Column

7, line 54 to Column 8, line 18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the path ID assigned for each of said IP paths comprises a unicast IP address. One would be motivated to do so in order to assign each IP path a different unicast address, so that all unicast packets being sent on the same path can utilize the same address, thereby reducing the number of address to save resources.

Su et al also do not disclose wherein the path ID assigned for each of said MPLS paths comprises a unique IP multicast address.

Ors et al disclose in Figure 1 that a switching node 46 that communicates with all the end systems 44 using an IP multicast communication system. The switching node 46 assigns a unique IP multicast label (MPLS label) to each MPLS path in the network and assembles the labels into a routing table. Each MPLS path is unique in that each leads to one of the two different intermediate destinations (LER 50 and LSR 52) using one of the three QoS. All cells destined to the same intermediate destination using the same QoS can use the same label and flow together to their same destination. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the path ID assigned for each of said MPLS paths comprises a unique IP multicast address. One would be motivated to do so in order to assign each MPLS path a different multicast label, so that all multicast packets being sent on the same path can utilize the same label, thereby reducing the number of labels to save resources.

Referring to claim 3, Su et al disclose that the unicast IP address corresponds to the IP path's next hop IP address. The next hop can be a destination address. Refer to Column 4, lines 59-67.

Referring to claim 5, Su et al do not disclose that assigning a unique IP multicast address comprises assigning a unique IP address from an internal managed group of IDs.

Ors et al disclose in Figure 4b that an IP multicast address (MPLS label) is chosen from the routing table in the switching node 46, the routing table being an internal managed group of six IDs representing intermediate destinations (LER 50 and LSR 52) and three different QoS. All cells destined to the same intermediate destination using the same QoS can use the same label and flow together to their same destination. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that assigning a unique IP multicast address comprises assigning a unique IP address from an internal managed group of IDs. One would be motivated to do so in order to assign each MPLS path a different multicast label as predetermined in a routing table, so that all multicast packets being sent on the same path can utilize the same label, thereby reducing the number of labels to save resources.

Referring to claim 6, Su et al do not disclose wherein the internal managed group of IDs sufficient large to represent all network hardware paths.

Ors et al disclose in Figure 1 that each MPLS path is unique in that each leads to one of the two different intermediate destinations (LER 50 and LSR 52) using one of the three QoS. All cells destined to the same intermediate destination using the same QoS can use the same label and flow together to their same destination. The routing table displays all possible network paths since the switching node 46 is connected to only two intermediate destinations. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the internal managed group of IDs sufficient large to represent all network hardware paths. One would be motivated to do so in order to represent all network paths so that all packets utilizing the same path can share the same label, thereby reducing the number of labels to save resources.

Referring to claim 7, Su et al do not disclose assigning a unique IP address comprises assigning a unique IP address for each software MPLS path entity.

Ors et al disclose that in Figure 1 that each MPLS path is unique in that each leads to one of the two different intermediate destinations (LER 50 and LSR 52) using one of the three QoS. All cells destined to the same intermediate destination using the same QoS can use the same label and flow together to their same destination. Each possible path is assigned a unique IP address since the switching node 46 is connected to only two intermediate destinations. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made

to include assigning a unique IP address comprises assigning a unique IP address for each software MPLS path entity. One would be motivated to do so in order to represent all network paths so that all packets utilizing the same path can share the same label, thereby reducing the number of labels to save resources.

Referring to claim 8, Su et al do not disclose returning an assigned unique IP address to the group of internal managed IDs when a path entity is deleted.

Ors et al disclose in Figure 1 that the switching node 46 assigns a unique IP multicast label (MPLS label) to each MPLS path in the network and assembles the labels into a routing table. When sending a packet, the system places the MPLS label into the header of the packet to be sent; after packet transmission, the label is no longer needed. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include returning an assigned unique IP address to the group of internal managed IDs when a path entity is deleted. One would be motivated to do so in order allow future packets towards the same destination with the same QoS to utilize the MPLS label, thereby reducing the number of labels to save resources.

Referring to claim 9, Su et al disclose in Figure 3 that the method further comprises sorting (step 23) the paths in each of the path groups. Each path in the path group is sorted based on the predetermined common attribute to determine which group to place it in. Refer to Column 4, lines 59-67.

Referring to claim 10, Su et al disclose in Figure 3 that sorting (step 23) the paths comprises sorting the paths by the value of the path ID. Each path in the path group is sorted based on the predetermined common attribute to determine which group to place it in. Refer to Column 4, lines 59-67.

Referring to claim 11, Su et al disclose in Figure 5 that the method further comprises building a database (memory 89) containing all path groups and using the database to compare the paths groups. Memory 89 "stores a lookup table in which groups of packets are assigned to communication channels 91A-91C". Refer to Column 10, lines 37-47 and Tables 1-3.

Referring to claims 12 and 17, refer to the rejection of claim 1. Furthermore, Su et al disclose in Figure 5 means (memory 89) for storing the path IDs. Memory 89 "stores a lookup table in which groups of packets are assigned to communication channels 91A-91C". Refer to Column 10, lines 37-47 and Tables 1-3.

Referring to claim 16, refer to the rejection of claim 6.

Referring to claim 18, Su et al disclose in Figure 4 programming entries in a route table (Table 1) and adjacency table (Table 2) to define hardware resources. The mapping unit 133 creates or updates a look-up table (Table 1) which maps traffic aggregates to communicaton channels. The mapping unit 133 also provides a queue mapping table (Table 2) that associates queues with links. Refer to Column 5, line 39 to Column 7, line 42.

Referring to claim 20, Su et al disclose in Figure 3 that said path group comprises paths having corresponding source routers and destination routers. The

process examines a continuous stream of packets for a predetermined common attribute in the packet header, which could be the IP destination address or the IP source and destination address. Refer to Column 4, lines 13-15 and Column 4, lines 49-59.

Referring to claim 21, Su et al disclose that the common hardware resource is a hardware path (communication channel or link). Refer to Column 5, lines 1-7.

4. Claim 15 is are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,625,161 to Su et al in view of U.S. Publication No. 2003/0112764 to Gaspard et al in view of U.S. Patent No. 5,903,735 to Kidder et al in view of U.S. Patent No. 6,731,639 to Ors et al, and in further view of U.S. Patent No. 6,728,268 to Bird.

Su et al do not disclose wherein the path IDs assigned for MPLS paths comprise broadcast IP addresses of form 255.x.x.x.

Bird discloses in Figure 2 the protocol layers of an IP host. If the next hop IP address is a broadcast address, CAN/IP 205 uses the global address of 255. If the next hop IP address is a multicast address, CAN/IP 205 also uses the global address of 255. Refer to Column 5, line 66 to Column 6, line 3; and Column 8, lines 4-31. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the path IDs assigned for MPLS paths comprise broadcast IP addresses of form 255.x.x.x. One would be motivated to do so since 255.x.x.x is the conventional broadcast network address.

Response to Arguments

5. Applicant's arguments filed June 21, 2007 have been fully considered but they are not persuasive.

Su et al disclose in Figure 3 assigning a unique path ID (predetermined common attribute) to each path within a path group. The unique path ID is the predetermined common attribute, which could be the IP destination address or the IP source and destination address. The process compares all the IP source/destination addresses in order to group the packets into traffic aggregates, and then assigns each traffic aggregate to a common communication channel or link. Refer to Column 4, line 49 to Column 5, line 7.

Gaspard et al disclose in Figure 4 a network with links 430, 435, 440, 445 that are classified according to the protocol that they support. The network manager classifies the IP links into links that utilize the IP protocol, the MPLS protocol, or both the IP and MPLS protocol. Links 430 and 440 support MPLS and IP forwarding, links 435 and 445 support just IP forwarding, and some links (not shown) just support just MPLS forwarding. Refer to Sections 0026 and 0044-0045. One would be motivated to include both IP and MPLS paths do so since IP and MPLS are prominent network protocols used to transmit packets from one network device to another. A network that supports both IP and MPLS is more flexible. Refer to Sections 0003 and 0008.

Ors et al disclose in Figure 1 that a switching node 46 that communicates with all the end systems 44 using an IP multicast communication system. The switching node 46 assigns a unique IP multicast label (MPLS label) to each MPLS path in the network

and assembles the labels into a routing table. Each MPLS path is unique in that each leads to one of the two different intermediate destinations (LER 50 and LSR 52) using one of the three QoS. Refer to Column 5, line 25 to Column 6, line 38; Column 7, lines 51-63; and Column 8, line 35 to Column 10, line 15. One would be motivated to assign each MPLS path a unique IP multicast address so that all multicast packets being sent on the same path can utilize the same label, thereby reducing the number of labels to save resources.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng CN
August 17, 2007

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